Resistance = ro l over A

1. A manufacturer recommends that the longer the extension cord used with an electric drill, the thicker (heavier gauge) the extension cord should be. This recommendation is made because the resistance of a wire varies

   1) directly with length and inversely with cross-sectional area

   2) inversely with length and directly with cross-sectional area

   3) directly with both length and cross-sectional area

   4) inversely with both length and cross-sectional area

2. If the length of a copper wire is reduced by half, then the resistance of the wire will be

   1) halved

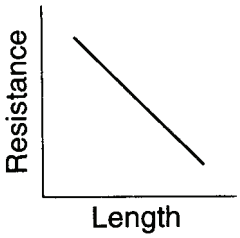
   2) doubled

   3) quartered

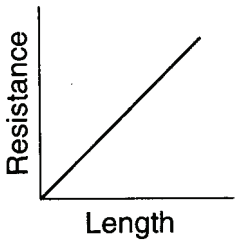
   4) quadrupled

3. A copper wire is part of a complete circuit through which current flows. Which graph best represents the relationship between the wire's length and its resistance?

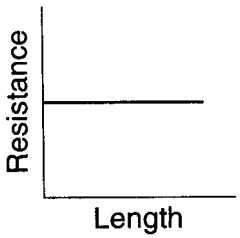
   1)



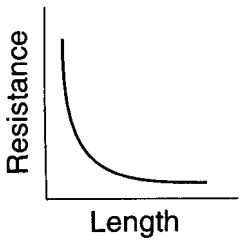
   2)



   3)



   4)



4. A complete circuit is left on for several minutes, causing the connecting copper wire to become hot. As the temperature of the wire increases, the electrical resistance of the wire

   1) decreases

   2) increases

   3) remains the same

Resistance = ro l over A

5. What is the resistance at 20.ºC of a 2.0-meter length of tungsten wire with a cross-sectional area of 7.9×10^{-7} meter^2?

   1) $5.7 \times 10^{-1}\,\Omega$

   2) $1.4 \times 10^{-1}\,\Omega$

   3) $7.1 \times 10^{-2}\,\Omega$

   4) $4.0 \times 10^{-2}\,\Omega$

6. The resistance of a metallic wire conductor is inversely proportional to its

   1) tensile strength

   2) cross-sectional area

   3) length

   4) temperature

7. The table below lists various characteristics of two metallic wires, *A* and *B*.

Wire	Material	Temperature (°C)	Length (m)	Cross-Sectional Area (m^2)	Resistance (Ω)
A	silver	20.	0.10	0.010	R
B	silver	20.	0.20	0.020	???

   If wire *A* has resistance *R*, then wire *B* has resistance

   1) *R*

   2) 2*R*

   3) $\frac{R}{2}$

   4) 4*R*

8. A 0.500-meter length of wire with a cross-sectional area of 3.14×10^{-6} meters squared is found to have a resistance of 2.53×10^{-3} ohms. According to the resistivity chart, the wire could be made of

   1) aluminum

   2) copper

   3) nichrome

   4) silver

9. What is the resistance at 20°C of a 1.50-meter-long aluminum conductor that has a cross-sectional area of 1.13×10^{-6} meter^2?

   1) $1.87 \times 10^{-3}\,\Omega$

   2) $2.28 \times 10^{-2}\,\Omega$

   3) $3.74 \times 10^{-2}\,\Omega$

   4) $1.33 \times 10^{6}\,\Omega$

10. Which segment of copper wire has the highest resistance at room temperature?

    1) 1.0 m length, 1.0×10^{-6} m^2 cross-sectional area

    2) 2.0 m length, 1.0×10^{-6} m^2 cross-sectional area

    3) 1.0 m length, 3.0×10^{-6} m^2 cross-sectional area

    4) 2.0 m length, 3.0×10^{-6} m^2 cross-sectional area